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Improvement of Science Process Skill and Understanding The Concept of Physics Using Inquiry Learning Models Leading

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Abstract: *This research aims to find out how the different skills of the science process students are taught using guided inquiry learning model with conventional learning and to know how the difference understanding of physics concepts of students taught using guided inquiry learning model with conventional learning. This research is a quasi experimental research with pretest-posttest experimental design group design design. The population is class X SMK Negeri 1 Stabat with a sample of two classes selected by random sampling. Data retrieval uses an instrument test of process science skills and concept comprehension. Based on research result, it can be seen that pretest and posttest value of sains process skill in control class 42,86 and 55,06 while pretest and posttest value in experiment class 42,13 and 79,66 while pretest and posttest value of concept comprehension on control class 33,33 and 58.83 while the pretest and posttest values in the experimental class were 40.83 and 79.*

Keywords: *Guided Inquiry Learning Model, Process Process Skills and Concept Understanding*

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I. Introduction

The process of education that is carried out, especially in schools must have a purpose, so that everything done by the teacher of the students towards what is to be achieved is the learning learning atmosphere directed to develop the potential of students in the hope that the process of education should be student oriented. In accordance with Education Act No. 20 of 2003 explains that education is a conscious effort planned to realize the learning atmosphere of the learning process so that learners are actively developing their potential to have spiritual spritual, self-control, personality, noble moral intelligence.

The subject of physics as a branch of science that studies the natural phenomena of both visible and abstract natural events. Physics is a universal science is one of the sciences underlying the progress of technological science. The importance of physics learning is inversely proportional to the reality. Reality on the ground shows low learning outcomes. This is supported by the data of The Trends in International Mathematics and Science Study (TIMSS) states that Indonesian students are only able to answer basic concepts or memorization (Efendi, 2010) [1].

According to Hamalik (2003) [2], no experiments will make students unskilled because by doing experiments can train students skills, such as science process skills. Scientific process skills (SPS) in physics education is very important because students are required to observe, compare, measure / use numbers, measure, experiment, summarize and predict.

Such learning problems need to be done among other efforts to innovate in learning, namely teachers with competencies are expected to choose the right learning model in order to achieve the learning objectives that have been determined optimally achieved. The chosen learning should be able to actively involve students, so that students can learn directly master the concepts that want to be implanted in the learning process students can develop the skills of the process of science in solving physics problems.

One of the learning models that can affect student learning outcomes, especially the concept of science concept concept is the guided inquiry learning model. According to Kuhlthau et al (2007) [3] guided inquiry learning model is a way of thinking, learning teaching that transforms school culture into a collaborative inquiry community.

According to Sanjaya (2012) [4], in the process of learning all the activities undertaken students are directed to seek find their own answers from a questionable, so it is expected to improve the skills of science concept understanding process. The guided inquiry learning model can also influence students' science process skills because learning with guided inquiry leads students to actively participate in the learning process where students will observe, compare, classify, measure, experiment, summarize predicting. Attitudes of students' skills are also increasingly influential, because in the learning process students directly experimenting experiments are reported.

The guided inquiry learning model can also influence students' science process skills because learning with guided inquiry leads students to actively participate in the learning process where students will observe, compare, classify, measure, experiment, summarize predicting. In addition to SPS, guided inquiry learning can also influence students' understanding of the concept because inquiry learning not only observes, collects data, analyzes, concludes, but interprets, exemplifies, classifies, summarizes, compares explains so students better understand the concepts of physics.

According to Wayan et al (2014) [5] which states that the results of descriptive statistical analysis show that the SPS and understanding of the concept of experimental class students who are learning with guided inquiry model in the high category is very high compared with learning using conventional learning while According to Komang et al. (2014) [6] which shows that the understanding of science (Science) concept of the students in the experimental group after applying the guided inquiry learning model is in very high category compared with conventional learning.

Based on the background of the problem, then in this research, the researcher is interested to apply the guided inquiry learning model to influence the science process skill of student concept comprehension specially on Static Fluid material formulated with title: "Improved Skills of Science Process and Understanding of Physical Concepts Using Guided Inquiry Model".

II. Method

This type of research includes quasi experimental research. The study involved two different sample classes treated. The experimental class with the inquiry learning model is guided by the class of control with conventional learning. This research uses two types of instruments that is the skill test of science concept comprehension process. The concept comprehension test is used to measure students' conceptual understanding of the concept of static fluid, the question items being developed in the form of multiple choice. Science process skill tests are used to measure students' science process skills on the concept of static fluid, a question item developed in the form of a description.

The analysis technique used after the test is normality, homogeneity test and gain test. The gain test is used to know which groups of science process skills and conceptual understanding are higher.

$$g = \frac{S_{pos} - S_{pre}}{S_{max} - S_{pre}} \quad (1)$$

Information:
g = gain
s_pos = Postes score
s_pre = Pretest score
s_mak = Maximum score

The research design is two group pretest-posttest.

Sampel	Pretes	Treatment	Postes
Experiment class	Y_1	X_1	Y_2
Control class	Y_1	X_2	Y_2

Information :
Y1 = Pre test
Y2 = Post test
X1 = Treatment (treatment) for guided inquiry learning model
X2 = Treatment (treatment) for conventional learning

Table 1. Category of acquisition of N-gain

N-gain acquisition category	**Score category**
g > 0,7	High
0,3 ≤ g ≤ 0,7	Normal
g < 0,3	Low

III. Results And Discussion

Objects in this study are the skills of the process of science and conceptual understanding as the influence of guided inquiry learning model and conventional learning model. Test of normality of pretest data in control class and experiment class was done by Kolmogorov-Smirnov test using SPSS 17 program with significance level 0,05.

Table 2. Normality Distribution Test of Postes SPS and Understanding Concept of Experiment Class and Control Class

Postes		Kolmogorov-Smirnov[a]		
		statistics	Dff	significant
SPS	Experiment	0,15	30	0,06
	Control	0,15		0,06
Consept Understanding	Experiment	0,15	30	0,08
	Control	0,15		0,06

The result of normality of postes data in the above table, obtained value of significance of postes of SPS and understanding of concept with significance value greater than 0,05, it can be said that experimental class data postes and control class of both variables are normal distribution.

Table 3. Homogeneity of Two Variance pretes SPS and Concept Understanding of Experiment Class and Control Class

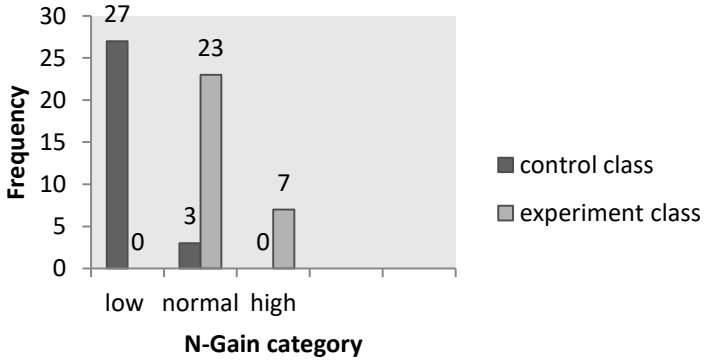
Postes	Statistik Levene	Dff 1	Dff 2	Significant.
SPS	0,21	1	58	0,15
Concept understanding	0,20	1	58	0,65

Based on the result of homogeneity test of variance by using Levene test in Table 4:14, for postes SPS obtained significance value less than 0.05, it can be concluded that the two classes are not homogeneous, whereas for postes understanding of concept obtained value significance> 0,05, it can be concluded that both classes are homogeneous. The result of calculation is obtained output of N-gain data of pretest and postes result of SPS of students using guided and conventional inquiry model can be seen in Table 4.17.

Table 4. List of Student Frequency Distributions for SPS

Gain Score	Category	Frequency	
		Control	Experiment
0,00-0,30	Low	27	0
0,31-0,70	Normal	3	23
0,71-1,00	High	0	7

Based on Table 4 above, the amount of gain-comprehension gain concepts in control-class students and experimental classes is shown in Figure 4.8



Based on Table 4 above the SPS in the experimental class students who have high category of 7 students, medium category 23 students, while the control class that has low category amounted to 27 students, medium category 3 students. From the above data, it can be concluded that the student gain in the experimental class SPS in the high category while the control class in the low category. The percentage of N-gain SPS in both classes can be shown in the N-gain comparison chart of the experimental class and the control class in the image.

IV. Conclusion

1. Gain students on experimental class SPS in high category while control class in low category.
2. Gain students on understanding the concept of experiment class in high category while control class in low category.
3. There is a significant correlation (relationship) between the student's SPS with the students' concept of understanding. It can also be said that good PPP has a positive relationship with students 'conceptual understanding, where the students' concept of understanding will increase if the SPS is well trained in students.

V. Suggestion

1. Teachers are expected to pay more attention to student activities such as SPS and understanding students' concepts by utilizing the available facilities, monitoring student activities and directing students to study diligently.
2. Researchers can further examine the effect of guided inquiry learning model assisted by macromedia flash and student activity on student cognitive ability.

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